METHOD AND APPARATUS FOR SINGLE BURST EQUALIZATION OF SINGLE CARRIER SIGNALS IN BROADBAND WIRELESS ACCESS SYSTEM

ABSTRACT

A receiver implementing a single carrier single burst equalization (SC-SBE) method is capable of achieving near optimal reception of individual single carrier RF bursts by making an accurate estimate of the burst's propagation channel impulse response (CIR). The SC-SBE method uses a CIR based coefficient computation process to obtain filter coefficients for a minimum mean square error decision feedback equalizer (MMSE-DFE). The MMSE-DFE filter computation process computes a sufficiently large number of coefficients for the DFE filters, i.e., the feed forward filter (FFF) and feedback filter (FBF), so that each filter spans the maximum anticipated length of the CIR. In order to implement the filters efficiently, a coefficient selection process eliminates less significant computed FFF and FBF coefficients. The resulting FFF and FBF are sparse filters in that most of the taps in the filter delay lines do not have a filter coefficient. Such filters may be efficiently implemented in the time domain.